

## COMPETITION IN THE BANKING SYSTEM OF REPUBLIC OF MOLDOVA

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*The banking system is one of the financial market segments which plays an important role in the financial circuit both at the country level and as a component of the international financial system. Developing a competitive banking system allows to avoid monopoly situations creating the possibility for each bank to be oriented to a certain range of services and products provided willing to increase continuously their quality and attractiveness. The dynamic analysis of effective competition in the domestic banking system would allow determination of factors with negative influence on the rate of participation of each bank in the total bank portfolio items, and also the possibility of reviewing the financial policies pursued in the banking sector. Study of bank system competition is a topic of interest both for financial analysts, and for authorities, given the opportunities arising: qualitative assessment of competition in the banking sector, verifying in which way the regulations in force have influenced the dynamics of competition, measuring the intensity of competition in the banking sector, detection, based on statistical analysis of competitive situation, of the main qualitative types (categories) of financial institutions active in the financial market. Moldova's banking system, according to the results obtained by analyzing the competition, has a moderate competition, even if it is obvious its increasing trend. Banking policies, trends in international financial markets, internationalization of capital markets affect the position of the banking system on domestic financial market, implicitly calculating the contribution of each bank in the formation of the portfolio: bank assets, total regulatory capital, the volume of loans and deposits.*

*Keywords: banking system, competition, Gini coefficient, Herfindahl–Hirschman, Lorentz distribution.*

Study of bank system competition is a topic of interest both for financial analysts, and for monetary authorities. Main concerns regarded qualitative assessment of financial-banking sector competition, verifying the degree in which way the regulations in force have influenced the dynamics of competition, measuring the intensity of competition in the banking sector and qualitative appreciation of competitions' dynamics, detection, based on statistical analysis of competitive situation, of the main qualitative types (categories) of financial institutions etc. It is important for Republic of Moldova to know how did the banking system evolve, in time, what measures and actions were taken and what other measures are necessary to be implemented. Or, it is absolutely necessary to know, pertinently and reliably, main force relations of the financial-banking actors of the market and their evolution in time. The article presents the results of some instruments and mathematical-statistical methods used in worldwide theory and practice for qualitative appreciation of the level and dynamics (changes) of competition in the banking sector of Republic of Moldova.

Statistical data used in this article include the years 1999-2010, on portfolio elements, mentioning the following categories: total assets of the commercial bank, normative capital, amount of credits and deposits for 15 banks that activate (as an exception, in 2008 the number of commercial banks equaled to 16).

The methodology of analysis and appreciation is as plentiful and various, as well as complex. The theory proposes a wide range of procedures and graphical and numeric instruments to

measure the level and dynamics of competition, and for interpretation of the obtained results. Among them, the mostly used, worldwide, are those from the domain of study and analysis of units' concentration in a statistical collectivity, in our case, statistical collectivity being the banking system, and the units – commercial banks.

The analysis of concentration in the banking system regards the assessment of the concentration degree of diverse elements from a commercial bank portfolio (assets, deposits, credits, ATMs, released cards, clients, etc.) and, on this base, of the level of competition and the main force ratios between commercial banks in Republic of Moldova.

Also, the assessment of concentration is used for market structure reference (credit market, deposit market, etc.). In this case, the concentration study might be supplemented with diversification assessment.

Concentration study is applicable just for positive value variables; with values that are susceptible to addition (addition of values makes economic sense!).

Statistical characterization of concentration can be achieved by two categories of procedures: numeric procedures (computation) and graphical procedures.

*Assessment of the concentration degree through numeric procedures* consists of computing some concentration indicators, such as the coefficients of the concentration degree:

- Gini concentration indicator
- Herfindahl–Hirschman indicator

*Assessment of the concentration through graphical way* consists in putting up the concentration curve — Lorentz–Gini curve.

### **The concentration curve**

The graphical procedure for concentration reference was belabored by Corrado Gini (Italy) and Lorentz (USA) for the study of income disparity. In our days, this procedure has numerous applications, inclusively in illustration and concentration assessment of sundries portfolio elements in the banking sector.

Graphical determination of concentration assumes putting up the concentration curve, also named Lorentz–Gini curve. For competition analysis in the banking system, the Lorentz curve is applied for graphical representation of percentage distribution of a variable (portfolio elements: assets, normative capital, credits, deposits etc.) in every commercial bank of a banking system. Generally, the curve is represented as cumulated values of the variable (on the ordinate), in percentage, as a function of relative effectives (in percentage) cumulated of commercial banks (on the abscissa).

The concentration curve is a graphical representation of  $q$  variable as a function of  $p$  variable. The values of the two variables are defined by the relations:

$$p_i = \frac{n_i}{N}, i = 1 \dots N, n_0 = 0, n_i = n_{i-1} + 1 \quad (1)$$

$$q_i = \frac{x_i}{\sum_{j=1}^N x_j}, i = 1 \dots N, L_0 = 0, L_i = L_{i-1} + x_j \quad (2)$$

The values of  $p_i$  and  $q_i$  variables vary between 0 and 1. If the values of characteristics is totally and equally distributed, the Gini indicator equals to zero, expressing a perfect equality in the banking system, namely every commercial bank has the same level of the characteristic (which states for a high competition level between commercial banks). If the indicator is equal to 1, the situation states for maximum inequality, because just one bank has entirely the studied characteristic (a situation with minimum competition and monopoly of a bank). The more the concentration curve is closer to the diagonal, the stronger the concentration is.

### Numeric procedures for concentration assessment

From the category of numeric procedures, the following two will be treated: Gini concentration indicator and Herfindahl–Hirschman indicator.

Gini concentration indicator -  $i_G$  – is a concentration synthetic indicator of distributions, defined as a ratio between two surfaces: concentration surface  $S_c$  and half of square surface (Gini), as given below:

$$i_G = \frac{\text{Concentration\_Surface}}{\frac{\text{Square\_Surface}}{2}} \quad (3)$$

Because the surface of the square equals to 1, the concentration indicator  $i_G$  is twice the surface between the concentration curve and the first diagonal of Gini square, which is the double of the concentration surface:

$$i_G = 2 \times S_c \quad (4)$$

The value of the concentration indicator is always between 0 and 1, respectively between 0 and 100%, reflecting the variation from the null concentration to a maximum concentration.

### Herfindahl–Hirschman indicator

Herfindahl–Hirschman indicator expresses the concentration degree of a market (e.g. credits market, deposits market etc.) taking into account the dispersion (distribution inequalities) existing between the biggest commercial banks. It's being defined as the sum of squares of market shares held by commercial banks.

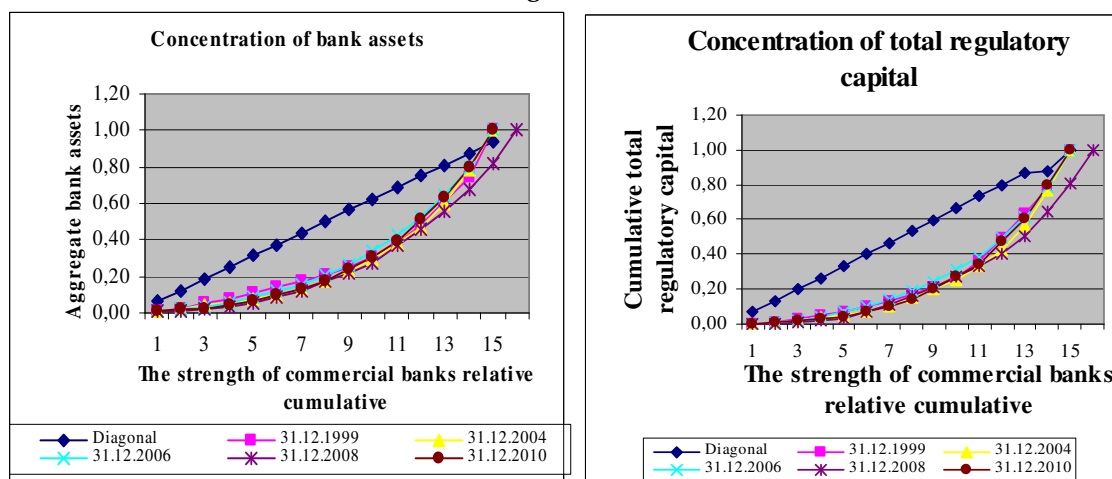
$$H = \sum_{i=1}^N (S_i)^2 \quad (5)$$

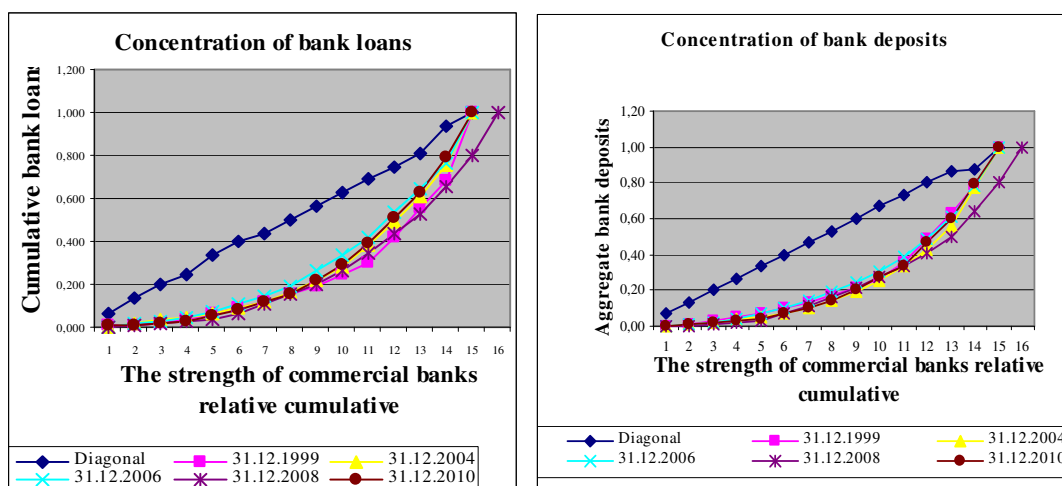
- where  $s_i$  represents market shares of all commercial banks.

The market shares are expressed in percent. The value of Herfindahl–Hirschman indicator varies between 0 and 10000. The bigger the value of Herfindahl–Hirschman indicator is, the more concentrated the market is. In case of monopoly (maximum concentration), the indicator is equal to 10000, but in case of a competition market, with an infinite number of participants (the perfect situation), the indicator approximates to zero.

The graphics of concentration curves, on portfolio elements, are presented below.

Figure nr. 1





Source: executed by the authors

The main concentrations of portfolio elements' indicators are presented in the table below:

***Concentrations of portfolio elements' indicators for RM banking system  
in 1999 - 2010***

	Total Assets		Total normative capital		Credits		Deposits	
	Gini Indicator	Herfindahl-Hirschman Indicator	Gini Indicator	Herfindahl-Hirschman Indicator	Gini Indicator	Herfindahl-Hirschman Indicator	Gini Indicator	Herfindahl-Hirschman Indicator
1999	0,429	2420,709	0,546	2644,740	0,499	2938,849	0,471	1731,848
2000	0,389	2090,808	0,507	2509,308	0,458	2806,662	0,450	2111,654
2004	0,454	1950,131	0,316	2542,820	0,444	2212,030	0,509	2024,688
2005	0,484	1937,654	0,316	2542,820	0,425	2455,837	0,495	2069,307
2006	0,444	1810,695	0,322	2219,239	0,457	1945,635	0,480	1878,579
2007	0,438	1805,08	0,361	1688,08	0,463	1890,59	0,473	1923,01
2008	0,453	1522,44	0,392	1576,83	0,483	1611,06	0,489	1653,06
2009	0,469	1592,89	0,389	1676,98	0,470	1531,44	0,502	1703,62
2010	0,468	1741,29	0,393	1898,53	0,482	1774,10	0,507	1824,56

Source: executed by the authors

Analyzing the presented graphics, as well as the numeric values of concentration indicators (Gini and Herfindahl-Hirschman), authors conclude that:

The concentration of all portfolio elements analyzed is stressed (the Gini indicator is between 0.316 and 0.546). For the analyzed period (years 1999 to 2010), the competition between commercial banks intensified (decrease of the concentration degree of portfolio elements and of diverse financial market segments). The competition in the banking system is determined, inclusively, by foreign banks' penetration in the inland market, connection of activity standards to international standards, extension of proposed services and performed operations.

Concentration curves' graphics have underlined the main qualitative types of commercial banks, traced by the individual concentration degree of portfolio elements, by the position on the market and by the main relations between commercial banks from Republic of Moldova. Based on the results of the statistical analysis, there were defined three main categories of commercial banks:

- *1<sup>ST</sup> TYPE* — *Moldova-Agroindbank*, which is detaching from the other commercial banks of Republic of Moldova's banking system, due to important market shares (app. 20% out of every portfolio element)
- *2<sup>ND</sup> TYPE* — *Four big commercial banks*: Victoriabank, Banca de Economii, Moldindconbank and Eximbank.
- *3<sup>RD</sup> TYPE* — *Next ten commercial banks*.

In numeric expression, the main relations between commercial banks (stressed out by concentration curves), are presented as follows:

- first 10 commercial banks (3<sup>rd</sup> type) hold approximately 30% of total bank assets, the rest of 70% is hold by the five big commercial banks (1<sup>st</sup> and 2<sup>nd</sup> type)
- first 10 commercial banks (3<sup>rd</sup> type) hold approximately 37% of total normative capital, the rest of 63% is hold by the five big commercial banks (1<sup>st</sup> and 2<sup>nd</sup> type)
- first 10 commercial banks (3<sup>rd</sup> type) hold approximately 40% of total bank deposits, the rest of 60% is hold by the five big commercial banks (1<sup>st</sup> and 2<sup>nd</sup> type)
- first 10 commercial banks (3<sup>rd</sup> type) hold approximately 29% of total bank credits, the rest of 71% is hold by the five big commercial banks (1<sup>st</sup> and 2<sup>nd</sup> type)
- *1<sup>st</sup> TYPE* Moldova-Agroindbank, at the end of 2010, for the first time in the analyzed period, conceded the position of market leader on attracted deposits, for Victoriabank, registering a drop of 0,8 p.p.

It was observed that the group of ten 3<sup>rd</sup> type banks, in analyzed period, had increased their contribution to every portfolio element, in average with 2-4%, the market share of 1<sup>st</sup> and 2<sup>nd</sup> type banks being decline.

In the 2<sup>nd</sup> type group of banks, repeated reshufflings have been registered, determined by evolution trends of national banking segment, as well as by financial market in general, Mobiasbancă and Banca Socială conceded their positions.

In respect to Republic of Moldova, combined analyses are preferred, both in real terms, and in nominals.

Although the analysis of indicators' dynamics (Gini, Herfindahl-Hirschman), stress out the tendency of competition intensification in the national bank system, however, the analyzed portfolio elements are concentrated by three banks: Moldova-Agroindbank, Victoriabank and Banca de Economii in direct ratio of 50%. Financial crisis from 2007-2008 had reduced the concentration movement of the portfolio elements, increasing the market share of banks with a significant weight on the market, simultaneously, decreasing the influence of small banks.

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